

# UNSUNG HEROES OF ENERGY EFFICIENCY

## Codes and Standards Raise the Bar and Lower Emissions

**B**ENJAMIN FRANKLIN once said, "Without continual growth and progress, such words as *i m p r o v e m e n t*, achievement and success have no meaning." Franklin was famous for his curiosity, writings, inventions and diverse interests. He was civic minded and believed in the greater good, living his motto that "well done is better than well said."

In Franklin's day, there were no fire or building codes like there are today. Homes were built out of wood and heated by open hearths. There was an ever-present danger of fire spreading out of control. In 1735, Franklin devised what were probably the first building codes in the U.S. to safeguard people and homes; these were minimum standards for the design of fireplace hearths, hearth extensions and combustible material clearance. The principles Franklin proposed in the 18th century are found in modern building codes.

Today, architects, homeowners, builders and standard-setting bodies understand and embrace the value of building codes. While some may seem arcane at times, they are essential to creating standardized expectations that enhance and protect the nation's homes, buildings and citizens.

### INCREASING THE STANDARD

Occasionally, code changes lag behind the needs of the public. An example of this can be found in the energy codes embodied in the Atlanta-based American Society of Heating, Refrigerating and Air-Conditioning Engineers Inc.'s Standard 90.1, the national model energy code for commercial buildings. For the first time in more than 18 years, ASHRAE has increased the minimum required roof and wall insulation levels in Standard 90.1. The above-deck roof insulation requirements set at R-15 in the old standard now are R-20, representing a 33 percent increase in roof insulation levels. Similar increases are required for walls. Recently announced at ASHRAE's

January meeting in New York, these standards will take effect immediately in states that automatically raise their requirements in conjunction with ASHRAE. In other states, a legislative or regulatory action adopting the new levels may be necessary.

The actual changes are specific to climate zone and building type (see the map on page 63). The ASHRAE Standard has various performance-compliance mechanisms, ranging from prescriptive requirements to computer simulations and trade-offs. But regardless of the code-compliance approach used, these new insulation values establish a new benchmark for energy efficiency in commercial building.



**WHY CODES FOR INSULATION**

According to the Washington, D.C.-based World Resources Institute, the U.S. has the highest carbon-dioxide emissions in the world, although developing countries, like China, are catching up quickly. While energy and oil companies endeavor to find new energy sources that are not detrimental to the environment, it is important not to lose sight of the myriad resources currently available, such as insulation.

An article in the February 2007 issue of *McKinsey Quarterly*, "A Cost Curve for Greenhouse Gas Reduction," says that almost a quarter of possible emission reductions would result from measures, such as better insulation in buildings, that carry no net-life-cycle cost. In effect, they come free of charge. The article can be accessed online at [www.mckinseyquarterly.com/Energy\\_Resources\\_Materials/A\\_cost\\_curve\\_for\\_greenhouse\\_gas\\_reduction\\_1911\\_abstract](http://www.mckinseyquarterly.com/Energy_Resources_Materials/A_cost_curve_for_greenhouse_gas_reduction_1911_abstract).

Insulation can dramatically increase energy efficiency, help reduce cooling loads and lower

FOR THE FIRST TIME  
IN MORE THAN  
18 YEARS, ASHRAE HAS  
INCREASED THE  
MINIMUM REQUIRED  
ROOF AND WALL  
INSULATION LEVELS  
IN STANDARD 90.1.

energy costs. This is predicated on existing ASHRAE requirements and independent analysis, which concludes that additional roof insulation is cost effective; saves energy; and reduces pollution and carbon emissions.

The improved Standard 90.1 is an essential first step to making buildings significantly more efficient. While these new insulation levels are long overdue, many building owners and

architects across the country already are installing insulation at levels that exceed these values to meet standards set under green-building programs, such as the Washington-based U.S. Green Building Council's LEED; Portland, Ore.-based Green Building Initiative's Green Globes; Washington-based U.S. Environmental Protection Agency's Energy Star; and Washington-based U.S. Department of Energy's Building America.

With this new minimum thermal performance standard, architects and building owners now can go even further to deliver more advanced and efficient building envelopes. For those who are not content to have only the minimum energy performance, this newly enhanced standard is very good news. 🌍

>> JARED BLUM is president of the Polyisocyanurate Insulation Manufacturers Association, Bethesda, Md. He can be reached at [joblum@pima.org](mailto:joblum@pima.org) or (301) 654-0000.

The map below shows the new, minimum recommended R-values for the ASHRAE climate zones. ASHRAE Standard 90.1 addresses building envelope and system requirements for commercial buildings; residential buildings higher than 3 stories; and semi-conditioned buildings, including warehouses. It is the nation's model standard for establishing the energy-performance requirements of these building types.

